the plurality of terminals comprise strait sections of the wire extending tangentially to the plurality of sequential loops of each air wound coil at each end of each air wound coil;

the wire is nearly pure copper; the wire is between .05 mm and 1 mm in diameter;

a space between each of the of sequential loops is between 1.1 and 20 times the diameter of the wire; and

a diameter of the each sequential loop is between 10 and 100 times the diameter of the wire.

16. (Once amended) The circuit board system of claim 2 in which a space between each of the of sequential loops is between 2 and 10 times a diameter of the wire.

Remarks

Claims 2, 4-12, 15, and 16 are currently pending based on the amendment herein, wherein claims 2, 4-12, 15, and 16 have been amended herein.

The Examiner rejected claims 2, 4-12 and 15-16 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner rejected claims 2, 4-12 and 15-16 under 35 U.S.C. §102(b) as being anticipated by Bernstein [US4,866,573].

Applicant respectfully traverses the§ 112 and § 102 rejections with the following arguments.

35 U.S.C. §112

Claims 2, 4-12 and 15-16 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner alleges that "[r]egarding claim 2, there lacks sufficient structure to support the functional language of 'means ...for pickup with a vacuum head of a pick-and-place machine,

and adapted for adjusting a position of the loops of the coil..., after the coil attached to the circuit board.' Applicant should clarify.how the `one or more coils' are part of the circuit board. The limitation of `one or more coils' is not further limiting. Applicant should clarify how the "multiple terminals' and the `pick-up means' are part of the circuit board. The limitations of `multiple terminals' and the `pick-up means' are not further limiting. Claims 4-12 and 15-16 inherit the defect of the parent claim."

The Examiner alleges that "[r]egarding claim 4, there lacks sufficient structure to support g the functional language of the surface includes a portion which ***can be removed*** from the wire coil."

The Examiner alleges that "[r]egarding claim 5, applicant should clarify what is intended by `the surface does not extend ***between all*** of the loops of the coil.' "

The Examiner alleges that "[r]egarding claim 7, there lacks sufficient structure to support the functional language of `in which the surface is degraded by exposure to a solvent that can be used to wash the circuit board after the board is connected to the circuit board.' There no antecedent basis for `the board.' Applicant should clarify the arrangement of `the board' relative to the `circuit board.' The phrase `whereby' is indefinite because it has been held that the functional `whereby' statement does not define any structure and accordingly can not serve to distinguish. *In re Mason*, 114 USPQ 127, 44 CCPA 937 (1957). There lacks sufficient structure to support the functional language of `the loops ***can be bent*** to adjust a position of the loops...'

The Examiner alleges that "[r]egarding claim 8, there lacks sufficient structure to support the functional language of `the surface is degraded by exposing the surface to water and at least a portion of a material of the surface ***can be removed by washing*** in water...' ".

The Examiner alleges that "[r]egarding claim 9, there lacks sufficient structure to support the functional language of `there surface is degraded by heating the circuit board after which the separation between the loops ***can be changed*** by bending the loops...' There no antecedent basis for `the separation between the loops.' "

The Examiner alleges that "[r]egarding claim 10, there lacks sufficient structure to support the functional language of `the material of the surface flows ...so that after heating the circuit board to reflow the solder at least some of the loops become bendable...' "

The Examiner alleges that "[r]egarding claim 11, there lacks sufficient structure to support the functional language of `the material of the surface sublimates ... so that after reflow soldering the circuit board at least some of the loops become bendable..' "

The Examiner alleges that "[r]egarding claim 12, there lacks sufficient structure to 'support the functional language of `...so that it can be easily cut between loops of the coil using a tool without... and then a position of the loops of the coil can be adjust...' "

The Examiner alleges that "Claim 15 lacks sufficient structure to support the functional language of the claimed method steps."

The Examiner alleges that "[r]egarding claim 16, there no antecedent basis for `the coils.' "

In response, Applicant has amended claims 2, 4-12, 15, and 16 to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

35 U.S.C. §102

Claims 2, 4-12 and 15-16 are rejected under 35 U.S.C. §102(b) as being anticipated by Bernstein [US4,866,573].

The Examiner alleges that "Bernstein discloses a printed circuit board comprising:

-a substrate [15];

-a plurality of conductive pads disposed on the structure being connected by plurality of conductive wires [see figure lA];

-a coil structure [1] including one or more coil of wire [2] bent into a plurality of sequential loops; and

- a plurality of terminals [3, 4, 5, 6, 7, 8]."

As to claim 2 as amended, Applicant respectfully contends that Bernstein does not anticipate claim 2, because Bernstein does not teach each and every feature of claim 2. As a first example, Bernstein does not teach the features of "a plurality of **air wound** coils, each coil comprising a wire bent into a plurality of sequential loops, wherein an adjustable **space** extends between each sequential loop, and wherein each air wound coil **does not comprise a core**; " (emphasis added). Bernstein does not teach an **air** wound coil **without a core** wherein the air

wound coil comprises a plurality of sequential loops with an **adjustable** space or gap existing between each of the sequential loops, as described by Applicant's claim 2. In contrast, Bernstein teaches a coil **with a core**. Additionally, Bernstein does not even mention an adjustable space or gap between sequential loops within a coil. Therefore, Applicant contends that Bernstein does not teach the preceding features of claim 1.

As a second example, Bernstein does not teach the features of "**a placement means** for **placement and tuning** of each air wound coil, said placement means including a first surface of a material connected to each air wound coil and extending over the plurality of air wound coils and a pick-and-place machine with a vacuum head for attachment to a second surface of the material , wherein the material is adapted to **adjust a position of the plurality of sequential loops** of each air wound coil for tuning each air wound coil, **after** each air wound coil is attached to the dielectric substrate." Bernstein does not even mention **a placements means** for placing coils on a substrate and tuning the coils after placement on the substrate as described by Applicant's claim 2. Furthermore, Bernstein does not teach any adjustable coil, specifically a coil that is adjustable **after** the coil is attached to a substrate as described by Applicant's claim 2. Therefore, Applicant contends that Bernstein does not teach the preceding features of claim 1. Based on the preceding arguments, Applicant respectfully maintains that Bernstein does not anticipate claim 2, and that claim 2 is in condition for allowance. Since claims 4-12, 15, and 16 depend from claim 2, Applicant contends that claims 4-12 and 15-16 are likewise in condition for allowance.

Conclusion

Based on the preceding amendments and arguments, Applicant respectfully believes that claims 4-12, 15-16, and the entire application, are in condition for allowance and therefore request favorable action. However, should the Examiner believe anything further is necessary in order to place the application in better condition for allowance, or if the Examiner believes that a telephone interview would be advantageous to resolve the issues presented, the Examiner is invited to contact the Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

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AMENDED MATERIAL

Claims 2, 4-12, and 15-16 are amended as follows:

2. (Twice amended) A circuit board system, comprising:

a dielectric substrate comprising a circuit board:

a plurality of electrically conductive pads connected to the dielectric substrate for electrical interconnection of components to the pads;

a plurality of air wound coils, each coil comprising a wire bent into a plurality of sequential loops, wherein an adjustable space extends between each sequential loop, and wherein each air wound coil does not comprise a core;

[multiple] a plurality of terminals extending between each air wound coil and respective pads;

an electrically conductive material connecting between the pads and respective terminals;

placement means for placement and tuning of each air wound coil, said placement means including a first surface of a material connected to [the] each air wound coil [s] and extending over [a] the plurality of [the] air wound coils and [for pick-up with a vacuum head of] a pick-and-place machine with a vacuum head for attachment to a second surface of the material , [and] wherein the material is adapted [for] to adjust [ing] a position of the plurality of sequential loops of [the] each air wound coil [coils] for tuning each air wound coil [the coils], after[the] each air wound coil is attached to the [circuit board] dielectric substrate.

4. (Twice amended) The circuit board system of claim 2 in which the first surface of the material includes a portion which [can be removed] is removable from [the wire] each air wound coil

without damaging [the] each air wound [wire] coil, so that [a] the position of the plurality of sequential loops of [the] each air wound coil can be changed to tune [the] each air wound coil.

5. (Twice amended) The circuit board system of claim 2 in which the [surface] material does not extend [between] over all of the plurality of sequential loops of [the] each air wound coil so that [a] the position of the plurality of sequential loops, [between] over which the [surface] material does not extend, can be changed by bending [the] each air wound coil for tuning [the] each air wound coil.

6. (Twice amended) The circuit board system of claim 2 in which the material [surface] is a [sufficiently weak or] flexible material, and in which [so that] the flexible material is adapted to bend the plurality of sequential loops [between which the surface extends can be easily bent] to adjust [a] the position of the plurality of sequential loops [sufficient] for tuning [the] each air wound coil without otherwise damaging [the] each air wound coil.

7. (Twice amended) The circuit board system of claim 2 in which the material [surface] is adapted to be degraded by exposure to a solvent [that can be] used to wash the [circuit board] dielectric substrate after [the board] each air wound coil is connected to the [circuit board] dielectric substrate [,] and [whereby] in which the plurality of sequential loops [can be] are bent to adjust [a] the position of the plurality of sequential loops for tuning [the] each air wound coil.

8. (Twice amended) The circuit board system of claim 7 in which the [surface] material is adapted to be degraded by exposing the [surface] material to water and at least a portion of [a] [material of] the first surface of the material can be removed by [washing in water without damaging the coils] exposing the first surface of the material to water .

9. (Twice amended) The circuit board system of claim 2 in which the [surface] material is adapted to be degraded by heating the [circuit board] dielectric substrate, and in which each air wound coil is tuned after the material is degraded [which the separation between the loops can be changed by bending the loops for tuning the coil].

10. (Twice amended) The circuit board system of claim 9 in which the first surface of the material [of the surface] is adapted to flow [s] when exposed to a soldering temperature of eutectic Pb/Sn alloy and in which [, so that after heating the circuit board to reflow the solder] at least one loop in the plurality of sequential loops is [some of the loops become] bendable for tuning [the] each air wound coil after the first surface of the material flows.

11. (Twice amended) The circuit board system of claim 9 in which the first surface the material [of the surface] is adapted to sublimate [s] when exposed to a soldering temperature of eutectic Pb/Sn alloy [, so that after reflow soldering the circuit "board at least some of the loops become bendable for tuning the coil] and in which at least one loop in the plurality of sequential loops is bendable for tuning each air wound coil after the first surface of the material sublimates .

12. (Twice amended) The circuit board system of claim 6 in which the [surface] material is [sufficiently soft and arranged, so that it can be easily] adapted to be cut between each loop in the plurality of sequential loops of each air wound coil so that [loops of the coil using a tool without damaging the coil and then a] the position of at least one loop in the plurality of sequential loops [of the loops of the coil] can be adjusted to tune [the] each air wound coil.

15. (Once amended) The circuit board system of claim 2 in which:

[the surface includes a portion which can be removed from the wire coil without damaging the wire coil so that a spacing between the loops of the coil can be changed to tune the coil;

the surface does not extend onto some of the loops of the coil so that a position of the loops can be changed by bending the coil for tuning the coil;

the surface is sufficiently weak or flexible so that the loops on which the surface extends can be easily bent to adjust a position of the loops sufficient for tuning the coil without otherwise damaging the coil;

the surface is degraded by exposure to a solvent that can be used to wash the circuit board after the coil is connected to the circuit board whereby the loops can be bent for adjusting a position of the loops for tuning the coil;

the surface is degraded by exposing the surface to water and at least a portion of a material of the surface can be removed by washing in water without damaging the coils;

the surface is degraded by heating the circuit board after which the separation between the loops can be changed by bending the loops for tuning the coil;

the material of the surface flows when exposed to soldering temperature of eutectic Pb/Sn alloy so that after heating the circuit board to reflow the solder at least some of the coils become mechanically separable for tuning the coil;

the material of the surface sublimates when exposed to soldering temperature of eutectic Pb/Sn alloy so that after reflow soldering the circuit board at least some of the coils become mechanically separable for tuning the coil;

the surface is sufficiently soft and arranged so that it can be easily cut between loops of the coil using a tool without damaging the coil and then a position of the loops of the coil can be adjusted to tune the coil;

the material of the surface includes a water soluble material;

the terminals are strait sections of wire extending tangentially to the loops of wire at each end of the coil of wire;

the coil is an air coil without any core; the wire is nearly pure copper; the wire is between .05 mm and 1 mm in diameter; the coils are spaced between 1.1 and 20 times the diameter of the wire; and

the diameter of the loops is between 10 and 100 times the diameter of the wire.]

the first surface of the material includes a portion which is removable from each air wound coil without damaging each air wound coil, so that the position of the plurality of sequential loops of each air wound coil can be changed to tune each air wound coil;

the material does not extend over all of the plurality of sequential loops of each air wound coil so that the position of the plurality of sequential loops, over which the material does not extend, can be changed by bending each air wound coil for tuning each air wound coil;

the material is a flexible material, and in which the flexible material is adapted to bend the plurality of sequential loops to adjust the position of the plurality of sequential loops for tuning each air wound coil without otherwise damaging each air wound coil;

the material is adapted to be degraded by exposure to a solvent ,wherein the solvent used to wash the dielectric substrate after each air wound coil is connected to the dielectric substrate, and wherein the plurality of sequential loops are bent to adjust the position of the plurality of sequential loops for tuning each air wound coil;

the material is adapted to be degraded by exposing the material to water and at least a portion of the first surface of the material can be removed by exposing the first surface of the material to water;

the material is adapted to be degraded by heating the dielectric substrate, and each air wound coil is tuned after the material is degraded;

the first surface of the material is adapted to flow when exposed to a soldering temperature of eutectic Pb/Sn alloy and in which at least one loop in the plurality of sequential loops is bendable for tuning each air wound coil after the first surface of the material flows;

the first surface the material is adapted to sublimate when exposed to a soldering temperature of eutectic Pb/Sn alloy and in which at least one loop in the plurality of sequential loops is bendable for tuning each air wound coil after the first surface of the material sublimates;

the material is adapted to be cut between each loop in the plurality of sequential loops of each air wound coil so that the position of at least one loop in the plurality of sequential loops of the loops of each air wound coil can be adjusted to tune each air wound coil;

the material comprises a water soluble material;

the plurality of terminals comprise strait sections of the wire extending tangentially to the plurality of sequential loops of each air wound coil at each end of each air wound coil;

the wire is nearly pure copper; the wire is between .05 mm and 1 mm in diameter;

a space between each of the of sequential loops is between 1.1 and 20 times the diameter of the wire; and

a diameter of the each sequential loop is between 10 and 100 times the diameter of the wire.

16. (Once amended) The circuit board system of claim 2 in which [the coils are spaced] a space between each of the of sequential loops is between 2 and 10 times [the] a diameter of the wire.